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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/389,904	09/03/1999	PHILIP D. WRATCHFORD	P-5531	6016

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EXAMINER

DO, AN H

ART UNIT

PAPER NUMBER

2853

DATE MAILED: 05/09/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/389,904

Applicant(s)

WRATCHFORD, PHILIP D. 

Examiner

An H. Do

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 24 February 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-39 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 16-18 and 29-37 is/are rejected.
- 7) ☒ Claim(s) 4-15, 19-28, 38 and 39 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

### DETAILED ACTION

This is the fourth Office Action on the merits responsive to the filing of the pending application.

#### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 2 and 33-37 are rejected under 35 U.S.C. 102(b) as being anticipated by Suzuki et al (JP 404336256 A).

Regarding claims 1 and 2, Suzuki et al discloses in Figure 2 an apparatus of an ink jet print head comprising a plurality of ink channels disposed in a common plane, each of the channels having at least one orifice (12) for projecting ink towards a substrate; and an ink heater (14) made of a positive temperature coefficient (PTC) thermistor material (Abstract), the ink heater (14) having a substantially planar configuration and extending in a plane generally parallel to the plane of the ink channels and adjacent to the ink channels (Figure 2).

Regarding claims 33-35, Suzuki et al discloses in Figure 2 a method of thermally tuning an ink heater (14) for an ink jet print head comprising the steps of forming the ink heater (14) using a PTC thermistor material (Abstract); and attaching a plurality of electrodes (13a, 13b) to the ink heater (14).

Regarding claims 36 and 37, Suzuki et al discloses in Figure 2 a method of maintaining the ink in an ink jet print head at a uniform temperature wherein the ink jet print head has a plurality of ink channels generally disposed in a common plane, the method comprising the step of using a planar ink heater (14) generally parallel to said common plane and made of a PTC thermistor material (Abstract).

3. Claims 29-32 are rejected under 35 U.S.C. 102(b) as being anticipated by Hori et al (US 4,716,279).

Hori et al discloses in Figures 4 and 5 a thermistor comprising a planar member made of thermistor material having a positive temperature coefficient (PTC) (column 2, lines 57-64); and first and second electrodes (7, 8) extending on one side of the thermistor and along first and second edges respectively, and are formed in a pattern so as to thermally tune the thermistor (Figure 5). The electrodes (7, 8) also include means (Figure 7) for thermally tuning the thermistor.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al (JP 404336256 A) in view of Hori et al (US 4,716,279).

Suzuki et al discloses the claimed invention except for reciting an ink heater made of a ceramic thermistor material.

Hori et al teaches the ink heater made of a ceramic thermistor material.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the ink heater made of a ceramic thermistor material, as taught by Hori et al, for the purpose of obtaining and controlling varied temperature as noted in column 1, lines 7-15 of Hori et al.

6. Claims 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujii et al (US 6,371,598 B1) in view of Suzuki et al (JP 404336256 A).

Fujii et al discloses in Figures 1 and 3 an ink jet print head (10) comprising a top body portion (3); an intermediate body portion (1) having an upper side and a lower side, a plurality of ink channels (6) disposed in a common plane along the upper side, each of the channels (6) having at least one orifice (4) for projecting ink towards a substrate (105), the upper side of the intermediate body portion (1) located adjacent the top portion (3); and a main body portion (2) located adjacent the lower side of the intermediate body portion (1).

Fujii et al discloses the claimed invention except for reciting an ink heater made of a thermistor material, the ink heater having a substantially planar configuration and is located between the lower side of the intermediate body portion and the main body portion, and extending in a plane generally parallel to the plane of the ink channels and adjacent to the ink channels.

Suzuki et al teaches in Figure 2 an ink heater made of a thermistor material (PTC), the ink heater having a substantially planar configuration and is located between the lower side of the intermediate body portion (1) and the main body portion (17), and

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extending in a plane generally parallel to the plane of the ink channels and adjacent to the ink channels.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the ink heater made of a PTC thermistor material, the ink heater having a substantially planar configuration and is located between the lower side of the intermediate body portion and the main body portion, and extending in a plane generally parallel to the plane of the ink channels and adjacent to the ink channels as taught by Suzuki et al, for the purpose of maintaining the constant temperature of the ink in the cavity as noted in the Abstract of Suzuki et al.

7. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fujii et al (US 6,371,598 B1) in view of Suzuki et al (JP 404336256 A) as applied to claims 16 and 17 above, and further in view of Hori et al (US 4,716,279).

Fujii et al discloses the claimed invention except for reciting an ink heater made of a ceramic thermistor material.

Hori et al teaches the ink heater made of a ceramic thermistor material.

It would have been further obvious to one having ordinary skill in the art at the time the invention was made to have the ink heater made of a ceramic thermistor material, as taught by Hori et al, for the purpose of obtaining and controlling varied temperature as noted in column 1, lines 7-15 of Hori et al.

***Allowable Subject Matter***

8. The indicated allowability of claims 16-28 and 39 is withdrawn in view of the newly discovered reference(s) to Suzuki et al and Fujii et al and Hori et al. Rejections based on the newly cited reference(s) follow.

9. Claims 4-15, 19-28, 38 and 39 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

10. The following is a statement of reasons for the indication of allowable subject matter:

Regarding claims 4 and 19, it is the limitation of "the ink heater includes a first electrode and a second electrode located on the first side of the thermistor material so that heat can be generated on the first side between the first and second electrodes," which was not found, taught or suggested by the prior arts.

Regarding claim 26, it is the limitations of "wherein the main body portion includes a recess and first and second grooves extending in a longitudinal direction from the recess, and wherein the recess receives the thermistor material and the first and second grooves receive the first and second leads, respectively," which were not found, taught or suggested by the prior arts.

***Response to Arguments***

11. Applicant's arguments, see pages 2-7, filed 24 February 2003, with respect to the rejection(s) of claim(s) 1-3, 29 and 31-37 under 35 USC § 103 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn.

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However, upon further consideration, a new ground(s) of rejection is made in view of Suzuki et al disclose an ink jet print head comprising a plurality of ink channels disposed in a common plane (Figure 2), each of the channels having at least one orifice (12) for projecting ink towards a substrate; and an ink heater (14) made of a thermistor material (Abstract), the ink heater (14) having a substantially planar configuration and extending in a plane generally parallel to the plane of the ink channels and adjacent to the ink channels.

***Contact Information***

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to An H. Do whose telephone number is 703-308-0525.

The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Russell E. Adams can be reached on 703-308-2847. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-3431 for regular communications and 703-305-3431 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.



AD  
May 5, 2003



JUDY NGUYEN  
PRIMARY EXAMINER